

WHAT IS CLAIMED IS:

1. A method of treating ballast water, comprising:
  - a) mixing an iron salt and an oxidizing agent in a mixing chamber to provide a mixture;
  - b) delivering at least a portion of the mixture to a reaction chamber;
  - c) continuously generating ferrate in the reaction chamber;
  - d) delivering at least a portion of the ferrate to a site of use that is proximal to the reaction chamber, wherein said site of use is a site where said ballast water is held;
  - e) contacting said ferrate with said ballast water, whereby organic matter in said ballast water is oxidized; and
  - f) adding additional iron salt and oxidizing agent to the mixing chamber.
2. The method of Claim 1, further comprising adding a base to the mixture.
3. The method of Claim 1, additionally comprising repeating steps (b) through (e).
4. The method of Claim 1, wherein said additional iron salt and oxidizing agent in step (f) is added in an amount to substantially replace the portion of the mixture delivered to the reaction chamber.
5. The method of Claim 2, wherein said base comprises an ion selected from the group consisting of a nitrogen base, the hydroxide ion, the oxide ion, the carbonate ion, and a combination thereof.
6. The method of Claim 2, wherein said base is sodium hydroxide.
7. The method of Claim 1, wherein said iron salt is selected from the group consisting of ferric nitrate, ferrous nitrate, ferric chloride, ferrous chloride, ferric bromide, ferrous bromide, ferric sulfate, ferrous sulfate, ferric phosphate, ferrous phosphate, ferric hydroxide, ferrous hydroxide, ferric oxide, ferrous oxide, ferric hydrogen carbonate, ferrous hydrogen carbonate, ferric carbonate, ferrous carbonate, and a combination thereof.
8. The method of Claim 1, wherein said iron salt is ferric chloride.
9. The method of Claim 1, wherein said oxidizing agent comprises at least one of the following: a hypohalite ion, a halite ion, a halate ion, a perhalate ion, ozone, potassium

peroxymonopersulfate, potassium monopersulfate, halogen, a peroxide, a peracid, a salt of a peracid, Caro's acid, and a combination thereof.

10. The method of Claim 1, wherein said oxidizing agent comprises sodium hypochlorite.

11. A method of synthesizing ferrate, comprising:

- a) mixing an aqueous solution comprising an iron salt and an oxidizing agent in a mixing chamber to form a solution of ferrate;
- b) delivering at least a portion of the solution of ferrate to a site of use that is proximal to the mixing chamber, wherein said site of use is a site where said ballast water is held; and
- c) contacting said ferrate with said ballast water, whereby organic matter in said ballast water is oxidized.

12. The method of Claim 11, further comprising adding a base to the aqueous solution.

13. The method of Claim 12, wherein said base comprises an ion selected from the group consisting of a nitrogen base, the hydroxide ion, the oxide ion, the carbonate ion, and a combination thereof.

14. The method of Claim 11, wherein said iron salt is selected from the group consisting of ferric nitrate, ferrous nitrate, ferric chloride, ferrous chloride, ferric bromide, ferrous bromide, ferric sulfate, ferrous sulfate, ferric phosphate, ferrous phosphate, ferric hydroxide, ferrous hydroxide, ferric oxide, ferrous oxide, ferric hydrogen carbonate, ferrous hydrogen carbonate, ferric carbonate, ferrous carbonate, and a combination thereof.

15. The method of Claim 11, wherein said oxidizing agent comprises at least one of the following: a hypohalite ion, a halite ion, a halate ion, a perhalate ion, ozone, potassium peroxymonopersulfate, potassium monopersulfate, halogen, a peroxide, a peracid, a salt of a peracid, Caro's acid, and a combination thereof.

16. The method of Claim 11, further comprising adding additional iron salt and oxidizing agent to the mixing chamber in an amount to substantially replace the portion of the aqueous solution delivered to the site of use.